Saltee Islands SAC (site code: 707)
Conservation objectives supporting document
-coastal habitats

Version 1

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1 Introduction

Achieving Favourable Conservation Status (FCS) is the overall objective to be reached for all Annex I habitat types and Annex II species of European Community interest listed in the Habitats Directive 92/43/EEC (Commission of the European Communities, 2003). It is defined in positive terms, such that a habitat type or species must be prospering and have good prospects of continuing to do so.

Saltee Islands SAC (site code: 707) is designated for a range of marine and coastal habitats including sea caves and sea cliffs. The following coastal habitat is included as a qualifying interest for the site:

- Vegetated sea cliffs of the Atlantic and Baltic coasts (1230)

This backing document sets out the conservation objective for the vegetated sea cliffs in Saltee Islands SAC, which is defined by a list of parameters, attributes and targets. The main parameters are (a) Area, (b) Range and (c) Structure and functions, the last of which is broken down into a number of attributes, including functionality, vegetation structure and vegetation composition.

The Saltee Islands are situated between 4km and 5km off the Wexford coast. Each of the two islands is identified as a separate sub-site: Great Saltee Island and Little Saltee Island. Their extent was digitised from internal NPWS files onto the OSi six inch (1:10,560) mapping series. Much of the information on the vegetation was obtained from the Natura 2000 assessment conducted for this site, along with information from Perry & Warburton (1976).

The targets set for the vegetated sea cliffs are based in part on the findings of the Irish Sea Cliff Survey (ISCS) (Barron *et al.*, 2011) and this document should be read in conjunction with that report. However, as neither sub-site was visited during the ISCS, the conservation objective for the vegetated sea cliff habitat within the entire SAC is quite generic and may be adjusted in the future in light of new information.

2 Conservation Objectives

The conservation objective aims to define the favourable conservation condition of a habitat or species at a particular site. Implementation of these objectives will help to ensure that the habitat or species achieves favourable conservation status at a national level.

3 Vegetated sea cliffs

Sea cliffs can be broadly divided into two categories: hard (or rocky) cliffs and soft (or sedimentary) cliffs, both of which are covered by the Annex I habitat 'vegetated sea cliffs of the Atlantic and Baltic coasts'. Hard cliffs are composed of rocks such as limestone, sandstone, granite or quartzite that are hard and relatively resistant to mechanical erosion. Soft cliffs are composed of softer rock, such as shale, or unconsolidated material, such as glacial till. Vegetation of hard sea cliffs in exposed situations exhibits a strong maritime influence and is relatively stable. Soft cliff habitats are more prone to slope failure, which results in the presence of fast-colonising pioneer species. Both hard and soft cliffs are found on the Saltee Islands.

Defining the limits of what constitutes a sea cliff is problematic and a number of different interpretations have been used in the past (Fossitt, 2000; Commission of the European Communities, 2003; JNCC, 2004; Browne, 2005). In order to address any inconsistencies, the following definition for sea cliffs was developed and used during the Irish Sea Cliff Survey (Barron *et al*., 2011):

"A sea cliff is a steep or vertical slope located on the coast, the base of which is in either the intertidal (littoral) or subtidal (sublittoral) zone. The cliff may be composed of hard rock such as basalt, or of softer substrate such as shale or boulder clay. Hard cliffs are at least 5m high, while soft cliffs are at least 3m high. The cliff top is generally defined by a change to an obvious less steep gradient. In some cases the cliff may grade into the slopes of a hillside located close to the coast. In these cases the cliff is defined as that part of the slope which was formed by processes of coastal erosion, while the cliff top is where there is the distinct break in slope. Both the cliff and the cliff top may be subject to maritime influence in the form of salt spray and exposure to coastal winds. A cliff can ascend in steps with ledges, and the top of the cliff is taken to occur where erosion from wave action is no longer considered to have been a factor in the development of the landform. The cliff base may be marked by a change in gradient at the bottom of the cliff. Where the base is exposed it can be characterised by scree, boulders, a wave-cut platform or sand, among other substrates. During this survey where cliffs occur within the subtidal zone the base was considered to be the high water mark. A cliff is considered to have reached its end point where it is no longer over 5m high (hard cliffs) of 3m high (soft cliffs), or no longer has a steep slope. To be considered in this study, a cliff had to be a minimum of 100m in length. Sea cliffs may support a range of plant communities such as grassland, heath, scrub and bare rock communities, among others."

The cliffs on Great Saltee Island are generally 30m in height, while those on Little Saltee Island are generally half this height. The cliffs are predominantly hard but there are areas of soft boulder clay cliffs along the northern and western shores. There are sea caves at the base of the cliffs on Great Saltee.

The site is also of international importance for breeding seabirds, and as such, is designated a Special Protection Area under the EU Birds Directive.

3.1 Overall Objective

The overall objective for 'vegetated sea cliffs of the Atlantic and Baltic coasts' in Saltee Islands SAC is to 'maintain the favourable conservation condition'. This objective is based on an assessment of the current condition of the habitat under a range of attributes and targets. The assessment is divided into three main headings (a) Area, (b) Range and (c) Structure and Functions.

3.2 Area

3.2.1 Habitat extent

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. The target is *'area to remain stable'*. Bearing in mind that coastal systems are naturally dynamic and subject to change even within a season, this target is assessed subject to natural processes, including erosion.

The distribution of vegetated sea cliffs is shown on a map in Appendix I. Rocky sea cliffs occur along the southern and eastern shores of the two islands, while boulder clay cliffs occur along the northern and western shores.

As cliffs are linear features on maps, their extent is measured in kilometres rather than hectares, as you would with other habitats. During the ISCS (Barron *et al.,* 2011), each cliff was divided into sections based on physical characteristics and vegetation cover. Breaks (i.e. non-cliff areas) of between 80m and 500m along a length of cliff were discounted from

the calculations. As the site was not assessed by Barron *et al.* (2011) only the total length of the cliff has been estimated. Whether or not there are sections or breaks has not been established. The total length, as estimated by digitising their extent on the OSi six inch (1:10,560) mapping series, is presented in the following table.

Site name	Length (km) of hard cliff	Length (km) of soft boulder clay cliff	Total length (km) of sea cliff
Great Saltee Island	4.06	1.45	5.51
Little Saltee Island	1.80	1.31	3.11
Totals	**5.86**	**2.76**	**8.62**

3.3 Range

3.3.1 Habitat distribution

The distribution of sea cliffs throughout Saltee Islands SAC as identified by data held in NPWS files is presented in Appendix I. The cliffs in Saltee Islands SAC are not likely to be redistributed through natural processes, unlike other more dynamic coastal systems such as sand dunes or saltmarshes. However, the soft boulder cliffs are likely to recede as they would naturally be more prone to erosion.

3.4 Structure and Functions

A fundamental aim of sea cliff conservation is to facilitate some degree of natural mobility through slumping. Sea cliffs can be of geomorphological interest as well as ecological interest and also erosion can expose geological features of interest.

3.4.1 Functionality and hydrological regime

Coastal protection works can disrupt the natural integrity of a sea cliff. The health and on-going development of vegetated sea cliffs relies on natural processes such as erosion continuing without any impingement. This is generally a bigger issue for soft cliffs which require a degree of slumping and erosion to expose bare soil for pioneer species to colonise; otherwise the vegetation is replaced by hardy grasses and scrub of little conservation value can develop. In addition, cliff erosion provides an important sediment source to sites further along the coast (e.g. sand dunes). Preventing erosion at a cliff site can lead to beach starvation at another site.

Flushes can be associated with cliffs in areas where the groundwater seeps out onto the cliff face. This is more usually associated with soft cliffs where these flushes contribute to the natural instability of the ground and provide patches of wetland habitat. The Annex I priority habitat ‘petrifying springs with tufa formation (Cratoneurion) (7220)’ can also be associated with sea cliffs, although it is not known whether or not such formations occur on the Saltee Islands.

The target is to maintain, or where necessary restore, the natural geomorphological processes without any physical obstructions and the local hydrological regime, including groundwater quality.

3.4.2 Vegetation structure: zonation

Ecological variation in this habitat type depends on a number of physical and biological factors, in particular climate, degree of exposure to sea-spray, geology and soil type, as well as the level of grazing and sea bird activity.

The target is to maintain the sea cliff habitat, as well as transitional zones, including those to terrestrial communities.

3.4.3 Vegetation structure: vegetation height

A varied vegetation structure is important for maintaining species diversity and is particularly important for invertebrates and birds. Grazing increases the species diversity and is particularly important for maritime grasslands and coastal heath, which are often associated with sea cliffs. The target is to maintain the structural variation in the sward height.

3.4.4 Vegetation composition: typical species & sub-communities

Different sea cliff communities develop in a number of habitat zones related to the degree of maritime influence (exposure to wind and sea spray), geology and soil type. In general Irish sea cliffs display a range of zones running in a series of horizontal bands up the cliff face, each of which has its own distinct sub-communities including:

- Splash zone
- Pioneer zone
- Rock crevice/cliff ledge zone
- Maritime grassland zone
- Maritime heath zone
- Maritime slope flush zone

There is considerable variation but the general pattern would be that the maritime influence is strongest near the base of the cliff and becomes gradually less dominant towards the cliff top. At the cliff base, the vegetation is naturally very open and the species present have a high tolerance to salinity. The splash zone generally has a well developed lichen flora dominated by species such as *Verrucaria maura, Ramalina* spp. and *Xanthoria* spp. These plant communities are dependent on rock crevices for rooting. Moving up the cliff, between the splash zone and the cliff top, vegetation on cliff ledges is less open and can support some species which are not exclusively associated with coastal conditions. Closer to the cliff top, maritime grasslands can occur. The plant communities and physical characteristics of maritime grasslands vary depending on the degree of exposure and whether or not grazing is a factor. Plant communities typical of sea birds and maritime therophyte communities (dominated by annual species) are exceptions to this horizontal zonation and can occur as a mosaic with the other plant communities. The following table presents lists of species that are considered typical of the different zones that are generally associated with hard cliffs by Barron *et al*. (2011).

Typical splash zone species			
Ramalina spp.	*Verrucaria maura*	*Xanthoria* spp.	
Typical crevice & ledge species			
Anthyllis vulneraria	*Asplenium marinum*	*Armeria maritima*	*Aster tripolium*
Atriplex prostrata	*Beta vulgaris* ssp. m*aritima*	*Cerastium diffusum*	*Lavatera arborea*
Catapodium marinum	*Crithmum maritimum*	*Festuca rubra*	*Limonium* sp.
Inula crithmoides	*Ligusticum scoticum*	*Plantago coronopus*	*Plantago maritima*
Sedum anglicum	*Spergularia rupicola*	*Sedum rosea*	*Silene uniflora*
Typical coastal heath species			
Calluna vulgaris	*Daboecia cantabrica*	*Empetrum nigrum*	*Erica cinerea*
Erica tetralix	*Vaccinium myrtilus*	*Scilla verna*	*Ulex gallii*
Typical maritime grassland species			
Anthyllis vulneraria	*Armeria maritima*	*Daucus carota*	*Festuca rubra*
Crithmum maritimum	*Hyacinthoides non-scripta*	*Plantago coronopus*	*Plantago maritima*
Sedum anglicum	*Spergularia rupicola*	*Silene uniflora*	*Scilla verna*

The cliffs in Saltee Islands SAC are thought to support a maritime vegetation cover with a typical south-eastern flora. The hard cliffs along the southern and eastern shores are known to be particularly diverse, with a range of species including sea pink (*Armeria maritima*), scurvy grass (*Cochlearia* spp.), red fescue (*Festuca rubra*), sea campion (*Silene uniflora*), spear-leaved orache (*Atriplex prostrata*), sea mayweed (*Tripleurospermum maritimum*), sea plantain (*Plantago maritima*), English stonecrop (*Sedum anglicum*), sea samphire (*Crithmum maritimum*), rock sea spurry (*Spergularia rupicola*) and sea spleenwort (*Asplenium marinum*). Some scarce or uncommon species have also been recorded including sea stork's-bill (*Erodium maritimum*) and golden-samphire (*Inula crithmoides*). A range of lichens including *Ramalina* and *Xanthoria* species are also present.

The boulder clay cliffs along the northern and western shores are less species-rich, but do support sea pink (*Armeria maritima*), red fescue (*Festuca rubra*), sea mayweed (*Tripleurospermum maritimum*), creeping bent (*Agrostis stolonifera*) and false oat-grass (*Arrhenatherum elatius*).

The target for this attribute is to ensure that the typical flora of vegetated sea cliffs is maintained, as are the range of sub-communities within the different zones.

3.4.5 Vegetation composition: negative indicator species

Negative indicator species can include non-native species (e.g. *Hebe* sp.*, Carpobrotus edulis, Gunnera tinctoria*), species indicative of changes in nutrient status (e.g. *Urtica dioica*) and species not considered to be typical of the habitat (e.g. *Pteridium aquilinum*).

The target for this attribute is that negative indicator species (including non-native species) should make up less than 5% of the vegetation cover.

3.4.6 Vegetation composition: bracken and woody species

Encroachment of bracken (*Pteridium aquilinum*) and woody/scrub species on cliffs, particularly onto maritime grasslands, leads to a reduction in species diversity.

The target for this attribute on the Saltees is that bracken should make up less than 10% of the vegetation cover, while woody species should make up no more than 20% of the vegetation cover.

4 References

Barron, S., Delaney, A., Perrin, P., Martin, J. and O'Neill, F. (2011). National survey and assessment of the conservation status of Irish sea cliffs. *Irish Wildlife Manual*s, No. 53. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

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Commission of the European Communities (2003). *Interpretation Manual of European Union Habitats – EUR 25*. DG Environment-Nature and Biodiversity, Brussels.

Fossitt, J.A. (2000). *A guide to habitats in Ireland.* The Heritage Council, Kilkenny.

JNCC (2004). *Common standards and monitoring guidance for maritime cliff and slope habitats*. Joint Nature Conservation Committee, Peterborough, UK.

Perry, K. W. and Warburton, S.W. (1976). *The Birds and Flowers of The Saltee Islands*. Perry & Warburton, Belfast.

Appendix I – Map of Saltee Islands SAC indicating the distribution of vegetated sea cliffs on Great Saltee Island and Little Saltee Island.